3271. BURROWING AND RENIFORM NEMATODE

State Exterior Quarantine

A quarantine is established against the following pests, their hosts and possible carriers:

A. Pests. Burrowing nematode (*Radopholus similis*) and reniform nematode (*Rotylenchulus reniformis*), parasites of the roots of citrus and many other plants.

B. Area Under Quarantine. The States of Alabama, Arkansas, Florida, Georgia, Hawaii, Louisiana, Mississippi, North Carolina, South Carolina, Texas, and the Commonwealth of Puerto Rico. See Appendix A below for supplementary information.

C. Articles and Commodities Covered. The following articles and commodities are restricted entry into California when arriving from the area under quarantine.

1. All earth (including sand and soil) and potting media.

2. All plants and plant parts with roots (including aerial roots).

3. All parts of plants produced below the ground or soil level.

4. All plant cuttings for propagation.

5. Exemptions. The following articles and commodities are exempt from the quarantine:

a. Industrial sand and clay.

b. Air plants (including certain orchids and other plants produced epiphytically) if growing exclusively in or on soil-free material such as osmunda fiber, tree fern trunk, or bark.

c. Aquatic plants (those species normally growing in, on or under permanent water, either rooted in soil or free-floating) if free from soil.

d. Plants secured by air-layering if roots are established and enclosed in the original soil-free moss wrappings.

e. Cuttings of ti (*Cordyline* spp.) if free from roots and soil.

f. Dormant bulbs and corms for propagation, if free from roots and soil, but not including taro corms for propagative purposes.

g. All fleshy roots, corms, tubers, and rhizomes for edible or medicinal purposes if washed or otherwise freed of soil.

See appendix E for additional information on exemptions.

D. Restrictions.

1. Certification Requirements for Commodities From Area Under Quarantine. All commodities covered moving from the "Area Under Quarantine" listed in (B) above, whether moved direct from said area or by diversion or reconsignment from any other point (without regard to period of time held or grown at any intermediate point), are prohibited entry unless each shipment or lot is accompanied by a certificate issued by the authorized agricultural official of the state, district, or commonwealth where produced establishing that all material contained in the lot or shipment meets either (a), (b), or (c) below:

a. It has been determined through surveys, conducted at annual intervals (or during the one-year period prior to shipment), that burrowing and reniform nematodes do not exist on the property or premise or facility used to grow the nursery stock, and that the seed or plant parts used for production of the plants were determined by the certifying officer to be free from burrowing and reniform nematodes (the survey methods shall have been approved by the California Department of Food and Agriculture);

or

b. The plants or plant parts being shipped to California were protected from burrowing and reniform nematode infestation by all the following sanitation methods:

1. Propagated from clean seed or from cuttings taken at least 12 inches above ground level.

2. Planted in sterilized soil or other suitable material prepared or treated to assure freedom from burrowing and reniform nematode.

3. Retained in sterilized pots, containers, or beds.

4. Placed on sterilized benches or sterilized supports at least 18 inches from the ground or floor level.

5. Area beneath benches or supports holding plants treated at six-month intervals with a registered nematocide or other material having nematocidal value and approved by the origin state agricultural officials, except when smooth clean flooring of concrete is present.

6. Plants and growing media sampled using methods approved by the California Department of Food and Agriculture and found free of burrowing and reniform nematode.

7. Protected from contamination by burrowing and reniform nematode until shipped,

or

c. The shipment consists of only unrooted plant cuttings, provided that the cuttings were taken from that portion of the plant which is growing at least 12 inches above ground level and were protected from contamination until shipped.

ADDITIONAL QUARANTINE INFORMATION

APPENDIX A 01-10-00

The folowing areas are known to be infested with burrowing nematode: Florida, Hawaii, the counties of Cameron and Hildago in Texas, and the Commonwealth of Puerto Rico.

Listed below are the counties, by state, known to be infested with reniform nematode based on surveys. At this time Alabama, Arkansas, Georgia, Louisiana, North Carolina and South Carolina have had their sampling protocols approved for premise-free certification to certify plant material to California from their infested counties. For those nurseries located in infested counties, certification will likely be based upon negative sampling of the property, premise, or facility.

Counties not listed have been surveyed and found free of reniform nematode; therefore, the states can certify, where possible, based upon countywide freedom from infestation. The survey information received to date is as follows:

Alabama. The counties of: Autauga, Baldwin, Barbour, Bibb, Blount, Bullock, Butler, Chambers, Cherokee, Chilton, Choctaw, Clarke, Clay, Cleburne, Coffee, Colbert, Conecum, Coosa, Dale, Dallas, De Kalb, Elmore, Escambia, Etowah, Fayette, Franklin, Geneva, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marengo, Marion, Marshall, Montgomery, Morgan, Perry, Pickens, Pike, Randolph, Saint Clair, Shelby, Sumter, Talladega, Tallapoosa, Tuscaloosa, Walker, Washington, Wilcox, and Winston.

Arkansas. The counties of Ashley, Jefferson, Lonoke and Monroe.

Georgia. The counties of: Baker, Bleckeley, Brooks, Burke, Calhoun, Charlton, Clarke, Clay, Colquitt, Cook, Decatur, Dodge, Dooly, Dougherty, Early, Emanuel, Grady, Houston, Jefferson, Lee, Macon, Marion, Miller, Mitchell, Morgan, Newton, Oconee, Pierce, Pulaski, Randolph, Richmond, Screven, Seminole, Stewart, Sumter, Tatnall, Taylor, Terrell, Thomas, Tift, Twiggs, Walker, Walton, Washington, Wayne, Webster, and Worth.

Louisiana. The parishes of Acadia, Ascension, Assumption, Avoyelles, Beauregard, Bossier, Caddo, Calcasieu, Caldwell, Catahoula, Concordia, East Baton Rouge, East Carroll, East Feliciana, Evangeline, Franklin, Grant, Iberia, Iberville, Jefferson, Lafayette, Lafourche, Madison, Morehouse, Natchitoches, Orleans, Ouachita, Plaquemine, Pointe Coupee, Rapides, Red River, Richland, Sabine, Saint Bernard, Saint Charles, Saint Helena, Saint John, Saint Landry, Saint Tammany, Tangipahoa, Tensas, Terrebonne, West Baton Rouge, West Carroll, and Winn.

North Carolina The counties of: Cumberland, Harnett, Hoke, Johnson, Richmond, Robeson, Sampson, and Scotland.

Mississippi. The counties of: Adams, Alcorn, Attala, Benlon Bolivar, Calhoun, Carroll, Chickasaw, Coahoma, Copiah, Covington, DeSoto, Forest, George, Greene, Grenada, Hancock, Harrison, Hinds, Holmes, Humphreys, Issaquana, Itawamba, Jackson, Jones, Lafayette, Lee, Leflore, Lowndes, Madison, Marion, Marshall, Monroe, Noxubee, Okabbaha, Parola, Perry, Prentiss, Pontotoc, Quitman, Rankin, Scott, Sharkey, Sunflower, Tallahatchie, Tunice, Tippah, Union, Warren, Washington, Yalobrusha, and Yazoo.

Texas. The counties of: Brazos, Burleson, Cameron, Fort Bend, Hidalgo, Lynn, Robertson, Starr, Terry, Wharton and Willacy.

South Carolina. The counties of: Calhoun, Orangeburg, Clarendon, Darlington, Dillon, Florence, Kershaw, Lee, Marlboro, Sumter, and Williamsburg.

FLORIDA NEMATODE CERTIFICATION
APPENDIX B 10-08-96

The Florida Department of Agriculture and Consumer Services does not provide California nematode certification to nurseries that ship “field dug” nursery stock or balled and burlaped nursery stock, unless CDFA has authorized it through the special permit process.

Florida will provide California nematode certification to growers of day lilies based on annual negative sampling of the growing site and on the condition that the plants are shipped bare-root.

If certified “field dug” or balled and burlaped nursery stock is found with Florida certification and a special CDFA permit is not presented, the shipment must be held and the accompanying documents retained for further investigation and the CDFA Pest Exclusion Branch notified.

SAMPLING AND LABORATORY INSPECTION FOR BURROWING AND RENIFORM NEMATODES FROM ALL SOURCES
APPENDIX C 10-09-96

Infestations of burrowing and reniform nematodes detected in California nurseries have been repeatedly traced to subtropical ornamental plants or unrooted cuttings secured from shipping points outside of the infested area. Burrowing and reniform nematodes have also been found repeatedly in laboratory examination of samples taken from certified shipments originating in infested states.

To protect California crops and nurseries from serious losses, it is necessary to require that samples for laboratory examination be collected from all incoming shipments where sampling is necessary. Plants, rooted cuttings, unrooted cuttings, or cane sections should be sampled according to the instructions given below.

In addition, inspectors are requested to take samples from any other plants or plant materials which are, for any reason, suspected of being infested with burrowing and/or reniform nematodes.

This inspection procedure does not modify the requirements of the California Burrowing and Reniform Nematode Exterior Quarantine.

Sampling Procedure For Laboratory Inspection. The number of plants, rooted cuttings, or unrooted cuttings which should be sampled is to be determined by reference to the accompanying table on the following page.

Different kinds or varieties of plants comprising a single shipment may be from different sources. Therefore lot and sample sizes should be determined individually, and separate samples collected from each kind or variety.

In the case of plants with roots, the sample taken from each plant should consist of a representative part of its root system. In the case of unrooted cuttings (or canes for division) the sample from each should consist of (1) any root primordia or root nubbins, any aerial roots or (2) the basal section cut from the cane to include at least one node.

The composite samples may be handled in the county laboratory or by the state nematology laboratory in Sacramento. Root samples should be processed by mist extraction, in certified chambers, or the Baermann funnel or jar incubation procedure as outlined in "Standard Procedures for County Plant Nematology Work” (P1 Path-B-61-6) with an incubation period of at least 48

hours. Stem sections should be cut into pea-size pieces and processed in Baermann funnels.

SAMPLING TABLE FOR EXAMINATION OF NURSERY STOCK FOR NEMATODES

If the lot size is: (Number of plants in lot)	The sample size should be: (Number of plants from which sample should be taken)
1 - 100	80% of the plants
101 - 125	90 plants
126 - 150	100 plants
151 - 200	110 plants
201 - 250	120 plants
251 - 300	130 plants
301 - 400	140 plants
401 - 500	150 plants
501 - 600	157 plants
601 - 700	165 plants
701 - 800	175 plants
801 - 900	185 plants
901 -1,000	195 plants
1,001 - 5,000	200 plants
5,001 -10,000	250 plants
10,000 - or more	300 plants

How to apply this table:

Procedure to follow:

Step 1. Using the total number of plants in the lot or shipment, consult the table to determine the number of plants from which samples should be taken.

Step 2. If a uniform number of plants are in each bundle, box, or container, divide the sample size obtained in Step 1 by the number of plants per bundle, box, or container.

If plants are not in uniform numbers in the boxes, bundles, or containers, first group smaller bundles to make grouped units as nearly similar in plant numbers as possible, then divide sample size obtained in Step 1 by the number of plants in the smaller boxes, bundles, or containers.

Step 3. Arbitrarily select one of the first 5 or 10 boxes, bundles, or containers as a starting point and sequentially select the remaining units.

Step 4. Sample all plants from the selected bundles, boxes, or containers.

Example: Shipment of 2,000 cuttings; 45 boxes of 40 and 10 boxes of 20.

Step 1. Sample size is 200 plants.

Step 2. By grouping the 10 boxes of 20 plants into 5 units of 40 plants we obtain the equivalent of 50 boxes of 40 plants.

Dividing 200 plants by 40 plants we find we need to inspect 5 boxes.

Step 3. If we arbitrarily select 5 as a starting point and select the remainder uniformly, we would take the sample from the 5th, 15th, 25th, 35th, and 45th boxes in the lot, remembering that some of these may require two smaller boxes to make the equivalent of a box of 40 plants.

SAMPLING GUIDELINES
APPENDIX D 07-22-98

The Department has been asked by the counties to provide guidelines for sampling regulated shipments The following sampling guidelines are proposed:

Samples should be taken at random according to the sampling table found in Appendix C above, immediately following the text of this quarantine.

From highest to lowest priority, plants for sampling should be selected as follows:

*Plant material for farm planting,

*Perennial plants for non-farm planting,

*Annuals for outdoor landscaping,

*Indoor decoratives for indoor use.

(Southern California counties receiving indoor decorative plants which are routinely planted outdoors may want to classify these plants under one of the other categories for sampling purposes)

ADDITIONAL INFORMATION ON EXEMPTIONS
APPENDIX E

Exemptions on air plants and air layered plants are listed because plants produced in this manner should not be contaminated by BN or RN. This type of plant material produced in earth (including sand and soil), potting media, or subject to higher-risk conditions (e.g. grown on the ground) is regulated and must be properly certified.